

REMARKS

Claims 5-8, 19-22, 34, and 42 are now pending in the application. Applicant thanks the Examiner for the courtesies extended to the Applicant's representative Jason A. Heist in the personal interview on April 12, 2006. In the interview, the claims and Taniguchi reference were discussed. Specifically various amendments were proposed to overcome the Taniguchi reference. No agreement was reached. Notwithstanding, Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the amendments and remarks contained herein.

SPECIFICATION

The specification stands objected to for certain informalities. Applicant has amended the specification according to the Examiner's suggestions. Specifically, Applicant has amended the title and updated the related application information as requested by the Examiner. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 5-8, 19-22, 34 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over in view of Taniguchi et al. (U.S. Pat. No. 6,768,205 B2). This rejection is respectfully traversed.

Claims 5 and 19 have been amended to recite that the penetrating electrode is formed in a through-hole of the semiconductor substrate from a first surface to a second

surface of the semiconductor substrate. The through-hole has sidewalls that are entirely orthogonal to the first and second surface, and the penetrating electrode has a projection which projects from the second surface. Claims 5 and 19 have also been amended to recite that the insulating layer is formed over an entire surface of the second surface of the substrate. The insulating layer includes a first insulating section formed in a region that surrounds the projection such that the projection forms a through-bore in the first insulating section above the second surface of the substrate, and a second insulating section that covers a remaining region of the second surface of the semiconductor substrate. The first insulating section is connected to the second insulating section by a radially tapering arcuate portion that has a varying radius of curvature from the through-bore to the second insulating section.

These amendments are supported at, for example, Figure 4 of the application where it can be seen that the penetrating electrode 40 passes through a through hole 28 formed in the semiconductor substrate 10. The sidewalls 28 of the through hole are entirely orthogonal to the first and second surfaces of the substrate 10. The penetrating electrode 40 includes a projecting portion 42 that projects above the second surface 38. Moreover, the insulating layer 50 includes a first insulating section 52 which surrounds the penetrating electrode 42 such that the penetrating electrode forms a through-bore in the first insulating section 52. The second insulating section 38 covers a remaining region on a second surface of the substrate 10. The first insulating section is connected to the second insulating section by a radially tapering arcuate portion 52 that has a varying radius of curvature from the through-bore to the second insulating section. This configuration is neither taught nor suggested in Taniguchi.

More specifically, referring to Figures 4 and 7 of Taniguchi, it can be seen that although Taniguchi teaches penetrating electrodes 21D that pass through the semiconductor substrate 21, the sidewalls of the through hole are not entirely orthongal relative to the first and second surfaces. In contrast, the through-holes of Taniguchi in Figures 4 and 7 include a curved sidewall (Figure 4) and a slanted sidewall (Figure 7).

Further, the first insulating section is not connected to the second insulating section by a radially tapering arcuate portion that has a varying radius of curvature from the through-bore to the second insulating section. In contrast, Taniguchi teaches in Figure 2 a insulating layer 14 that includes a slanted portion. This slanted portion is not equivalent to a radially tapering arcuate portion that has a varying radius of curvature from the through-bore to the second insulating section. Because these configurations are also neither taught nor suggested, Applicant respectfully asserts that claims 5 and 19 and each corresponding dependant claim would not have been obvious.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner

believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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